Central Alaska Network
Long Term Ecological Monitoring Program
Denali National Park & Preserve
Summary Trip Report

Riley Creek Mini-Grid

Initial Visit
June 29 – July 8, 2009

Photo 1. View from the helicopter of approximately 75% of the Riley Creek mini-grid. Point 22 sits at edge of the larger lake. Points also exist in both of the hanging glacial valleys in the upper left side of photo. Camp is located in the widest gravel bar in the middle right of photo.

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PURPOSE: The purpose of this trip was to install and measure vegetation and soils attributes at 25 permanent vegetation plots in the Riley Creek mini-grid according to the protocols of the central Alaska Network vegetation monitoring program (see Roland *et al*. 2005). Twenty-five points were investigated and 22 were installed and sampled (including one auxiliary plot) in the span of 8.5 working plus 1.5 travel days. Four points were determined to be inaccessible or unsafe for sampling due to their location in steep active rock chutes or on steep active talus slopes which were unvegetated.

PERSONNEL: Sarah Stehn- non-vascular collections, soils data, and crew lead
Janet Prevey- vascular collections
Duke Brady- plot photographs and tree measurements

ACCESS TO MINI-GRID: The Riley Creek minigrid is accessed by helicopter. The center point of the grid is 22.6 kilometers southwest of Headquarters, about a 10 minute helicopter ride. The helicopter transported two crew members and their gear to the minigrid, returned to headquarters to pickup remaining crew member and gear, and returned to the minigrid. All crew members and gear were left at the minigrid by 11:00am.

CAMPSITE LOCATION: We camped near the center of the grid, southeast of point 19 (longitude -149.0289856, latitude 63.5653893). The campsite is located on the widest portion of the gravel bar of Riley Creek, clearly visible on the map. This site offers a reliable water source and plenty of flat spots for camping. We chose a location we felt offered the most visibility, as there is a fair amount of tall brush on and off the river bar. There was lots of sign of bear digging for roots along the river bar but none of it seemed very recent. In the brush off of the river bar there were lots of animal trails, presumably moose. We remained alert, especially at the kitchen area because the visibility was less than ideal. Satellite phone reception and radio contact on the Savage repeater was good here.

Photo 2. Arial view of approximate camp location at the junction of creeks in the right side of the photo. The bluff on the left is the southern part of the grid (north facing slope).

WATER AVAILABILITY: We relied completely on the water available near our campsite. Other water exists in the study area in small lakes and other smaller creeks. After a short rain, the water in Riley Creek rose and became clouded. It is possible that if it were raining a lot, this water may need to settle before pumping. Also, cummatively over the very hot week, it seemed to become more dirty, perhaps as seasonal snow patches melted out.

Photo 3. This photo from near Point 7 looking southwest shows some of the inaccessible terrain encountered in this minigrid. Point 3 sits atop this peak and was not sampled.

HIKING CONDITIONS: The Riley Creek minigrid has steep sections and brushy sections. Route finding should be taken seriously as choosing smart routes will save lots of time and energy for everyone. The entire south facing side of the Riley Creek valley (the northern part of the grid) is quite brushy with 6ft high *Betula nana* and willows. Plan for extra time here and pay close attention to meadows and creek beds that provide better walking. The area near Point 22 that has been dammed by beavers is quite wet, and skirting around the edge of the lake is not as easy as it seems. The north facing side of the Riley Creek Valley (southern part of grid) presents very steep slopes with terraces on top, presumably formed from hanging glaciers. The steep slopes here are covered with alder but we found a great moose trail heading up from just west of camp that we stuck with once we found it. Once you get on top of the slope, the low benches are covered with dwarf birch and the higher benches are a hard surfaced lichenicolous tundra great for walking. Be prepared for a fair amount of travel on loose talus slopes, as many of these cannot be avoided. Be aware of your teammates whereabouts and yell "ROCK!" if necessary if one is dislodged. Crossing Riley Creek did not prove difficult but it was a very dry year and we chose our locations carefully. The place just east of camp reached to about our knees to middle thighs. After a long day, this could be tricky so be sure to rest up and focus for the last push. We also crossed at the west side of the grid and with a little searching found a place that was reasonable. However, with the one thundershower we got, which seemed to hang out in upper Riley Creek valley, we noticed a 6 inch rise in the creek and increased cloudiness of the water. During periods of high rain or local downpour, this creek will rise and may require more careful route selection to cross. Some of the side creeks coming down the north facing slope are surprisingly deep and were tricky to cross because of all the brush and slippery rocks.

WEATHER PATTERNS: The weather was unbelievable for this grid. In the 10 days, it was only partly cloudy the first day and thundershowers on two afternoons. It rained on us a total of 10 minutes during one of those showers. The temperatures were very hot, in the 70s at least with a breeze most of the time. Not surprisingly given the weather, a few wildfires started in the park and farther north during the time we were out in the field. The smoke rolled in on day 3 and became thickest on day 7. It was thick enough to slow us down due to the steep hiking, it was irritating to our lungs and eyes but did cool the sun down.

PHENOLOGY OBSERVATIONS: For the most part, phenology was optimal on this minigrid. It seemed that everything we saw was in flower. The exception was the places

where seasonal snow patches lingered. We may have missed the flora completely in a few plots where patches had quite obviously just melted away from the plot.

ANIMAL OBSERVATIONS: We saw a coyote cruising through the valley below Point 7, preferring to travel on the snow patches. We also saw pikas, ground squirrels, and rock ptarmigan including a nest. Mosquitoes at this grid were not too bad at all, but this was perhaps influenced by the hot temperatures and breeze. We also saw a bull moose multiple times over the ten days, on both sides of the creek. Animals trails were frequent as well as both moose and bear scat. Near our kitchen we watched harlequin ducks and horned grebes flapping around in the creek almost nightly.

GENERAL NOTES ON PLOT WORK: The ecological variety provided by the Riley Creek minigrid makes it a nice place to work. Although some plots are certainly not pleasant, there will only be a few of that type. Point per point, this grid is not very diverse, but because it encompasses so many different ecotypes, the diversity adds up. The southern part of the grid is beautiful and offers great walking except for the loose rock. Knee pads are *highly* recommended for the non-vascular and/or soils person.

Photo 4. Point 11, a stabilized talus slope was our most diverse for both vascular and non-vascular plants.

Photo 3. Looking north from the perimeter of Point 2. We did about five plots in these large talus fields.

RECORD OF COLLECTIONS:

Name	Collection	Numbers
J. Prevey	Vascular	JP-09-057 to JP-09-153
S. Stehn	Non-vascular	SS-09-102 to SS-09-310
D. Brady	Photographs	IMG_0290 to IMG_0639
S. Stehn	Soil	23 samples
D. Brady	Tree Cores	22 cores

DAILY ACTIVITIES:

Date	Activity/Points Completed	Time Period	Comments
6/29/09	Tavel to study area by helicopter	8am-1pm	
	Point 25	2:30pm-6:45pm	Climb very steep brushy slope to reach, plot on dwarf birch bench

DAILY ACTIVITIES, CONTINUED:

Date	Activity/Points Completed	Time Period	Comments
6/30/09	Point 21	9:30am-12:45pm	Plot at juncture of two creeks on isthmus
	Point 22	1:15pm-3:45pm	At edge of a beaver dammed lake, previously submerged
	Point 23	4:15pm-7:30pm	Small rocky opening with alder
7/1/09	Point 24	9:15am-12:00pm	Poplar forest on old flood terrace
	Point 20	1:30pm-3:45pm	In alder thicket on slope
	Point 19	4:15pm-6:30pm	In semi-open white spruce forest
7/2/09	Point 7	9:30am-12:15pm	Talus slope
	Point 2	1:30pm-3:30pm	In large rock jumble at base of slope
	Point 6, 3	3:30pm-4pm	Inaccessible, not sampled
	Point 1	4:45pm-6:30pm	Upper reach of alluvial fan, talus
7/3/09	Point 9	9:15am-11:30pm	Base of alluvial fan, near wet area
	Point 5	1pm-2:45pm	In boulder field near fairly large and creek
	Point 10	3:15pm-5:15pm	On edge of ravine, short dwarf birch and hummocks
	Point 3, 4, 8	Various	Inaccessible, not sampled
7/4/09	Point 11	10am-2pm	Stabilized talus slope, near bush
	Point 12	2:45pm-5pm	On hard tundra bench, rock and frost boils, lichenicolous
7/5/09	Point 16	10am-12pm	Partly in alder, brushy walk
	Point 17	1:45pm-4pm	1m high dwarf birch, across small creek on slope
7/6/09	Point 14	9am-11:30am	Similar to Pt 17, dwarf birch
	Point 13	12pm-3pm	Rocky, lichenicolous
	Point 18	4pm-5:30pm	Gravel bar plot, small shrubs
7/7/09	Point 15	8:45am-10:45am	On bluff, 1m high dwarf birch
	Point 26A	11:45am-3:15pm	Spruce/poplar riparian forest
7/8/09	Travel to HQ by helicopter	8am-4:30pm	

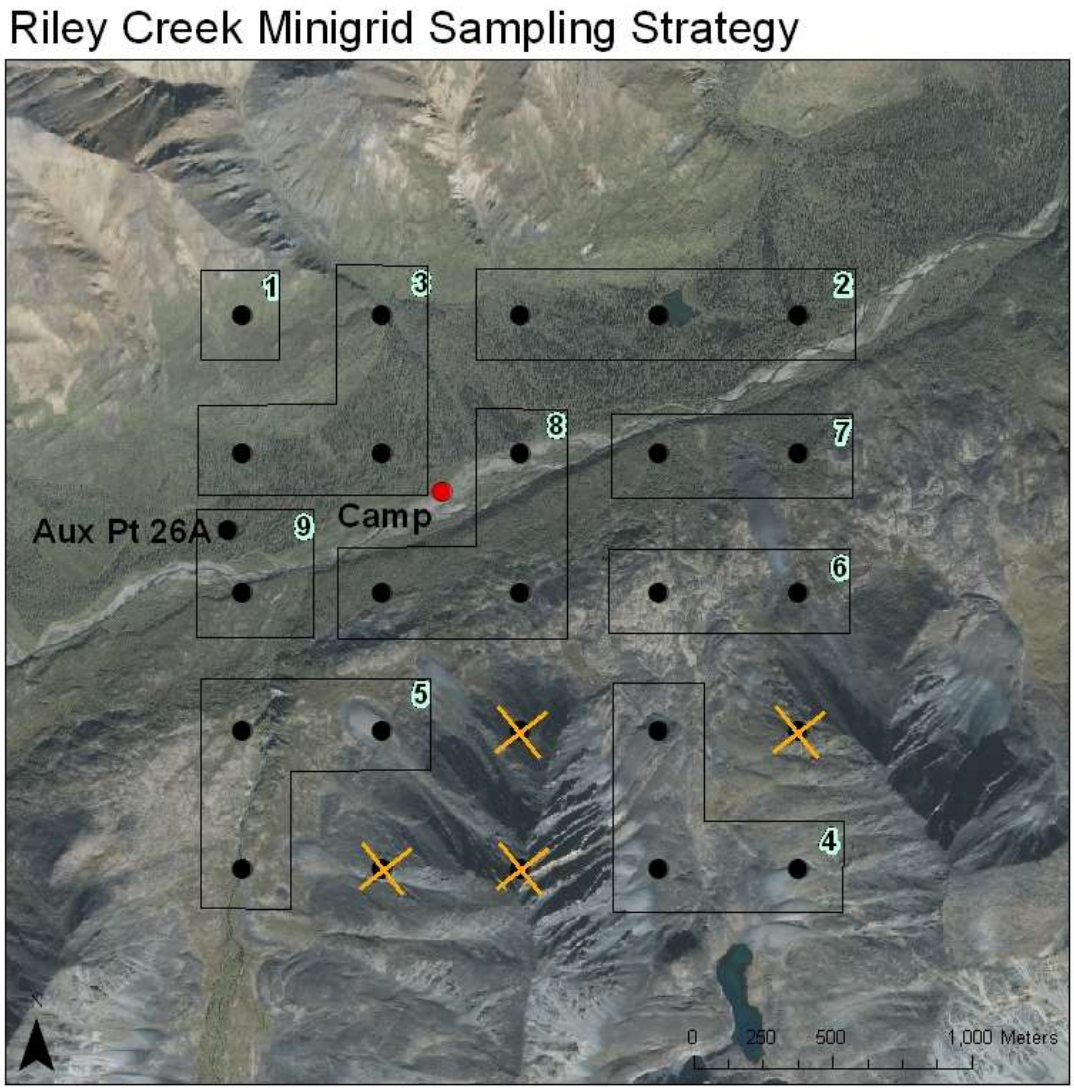
FUTURE CONSIDERATIONS: This grid could likely be sampled in 9 days instead of 10 since 4 plots were inaccessible. However with the somewhat strenuous hiking, days were generally long. 4 plots per day is a possibility for the closer locations as no one plot offers that much diversity and there are not many trees (except in the north).

Photo 6. Panoramic view from near Point 7 looking west to northeast. Point 11 is on the slope beyond the obvious debris flow in the right side of the photo. Point 12 is on the lichenicolous bench in the middle of the photo. The northern part of the grid goes partway up the other side of the valley.

Photo 4. Panorama from Point 11 looking north to west. Point 22 is at the far edge of the lake in the photo. Camp is just out of sight on the left edge of the photo.

REFERENCES CITED:

Roland, C.A., Oakley, K., Debevec, E. & Loomis, P. (2005) Monitoring vegetation structure and composition at multiple spatial scales in the Central Alaska Network. National Park Service, Central Alaska Network, Final Monitoring Protocol.



Map 1. Map showing grid points grouped by sampling day. Day number shown in upper corner of each group.